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以虛擬儀器融入產業導向之自動量測技術課程實驗設備建置、課程規劃、教材發展、教學實驗及學習成效評估

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摘要

自動量測為針對環境、系統或受測物，能做自動化之及時量測，在此研究中，將以虛擬儀器的觀念，發展出一套符合產業導向之自動量測技術課程實驗設備和教材。自動量測在功能上，不但意指能夠及時量測和儲存所得到之量測值，並能夠加以處理與應用，因此，在自動量測技術上之可程式化、設備整合、控制應用、價格、功能和維修技術上等，均需要特別去重視。此計畫將預定為期三年完成，第一年以進行產業導向自動量測技術之專業能力項目調查，並規劃出一套課程，並進行教學教具之系統測試，第二年將發展以虛擬儀器融入產業導向之自動量測技術教材及建構教學實驗設備，第二年後半年也將開發教學評估量表，為第三年實施實驗教學及學習成效評估做準備。此研究規劃之授課對象將針對技專院校大學部高年級電機電子領域之同學。此研究計畫提出以虛擬儀器融入產業導向之自動量測技術課程實習設備建置、課程規劃、教材發展、教學實驗及學習成效評估。其中，包含基礎科技-感測器與量測元件之使用、新興科技-虛擬儀器的應用、

產業導向之整合性技術-自動量測技術與產業導向之工業教育-教材教具之建置與實驗教學和評估等。

關鍵字: 自動量測;產業導向;虛擬儀器;課程規劃;教學;評估

Experimental Equipment Establishment, Course Arrangement, Teaching Material Development, Teaching Experiment and Learning Evaluation of Industry-Oriented Automatic Measurement Technology Course by Integrating Virtual Instrument

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Abstract

Automatic measurement means environment, systems or devices can be measured automatically. In this research, an industry-oriented automatic measurement technology course will be developed by applying virtual instrument. When concerned with capibility, automatic measurement not only possesses instant data measurement acquisition but also be able to save data for further processing and application. In automatic measurement technology, therefore, programmable feature, equipment integration, control application, cost, function and maintenance are all needed to be concerned. This is a three year project. The first year concentrates on professional ability investigation of automatic measurement technology, arrangement of course and laboratory equipment test. In the second year, teaching material, laboratory equipments and course arrangement of the industry-oriented automatic measurement technology will be completed by utilizing virtual instrument. Moreover, the evaluation methods and learning assessment forms will be built. In the third year, a class that is based on the developed automatic measurement technology course will be given for junior or senior of a vocational university. Finally, learning evaluation will be performed to

understand how the students study in this course. In this project, teaching material, laboratory equipment, course arrangement, experiment class and learning assessment of an industry-oriented automatic measurement technology will be developed by integrating virtual instrument concept. The content includes basic technology –application of sensors and measurement devices, advanced technology – virtual instrument, industry-oriented integrated technology – automatic measurement technology and industry-oriented industrial education - course arrangement and design, teaching and evaluation.

Key words: Automatic measurement;Industry-oriented;
Virtual instrument; Course arrangement;
Teaching;Evaluation